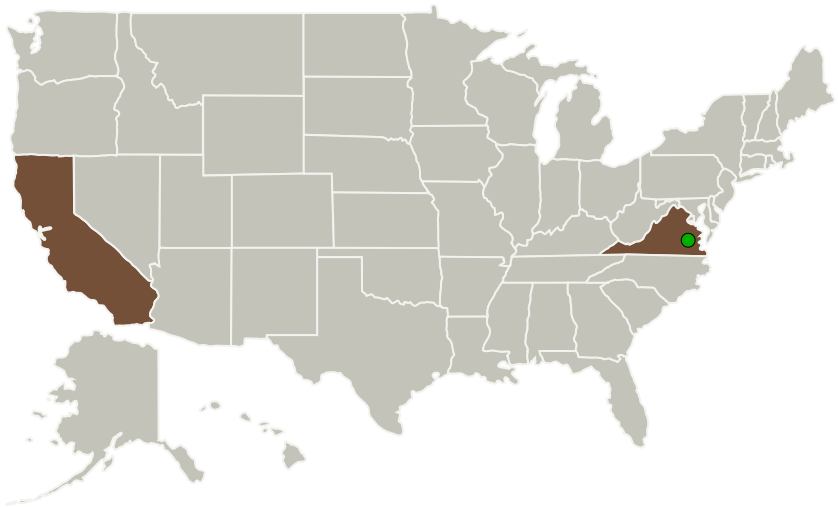
Innovative Ground Habitats for Lunar Operational Outpost (IGLOO), Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

NextGen Aeronautics, Inc. is proposing an alternate architecture for inflatable lunar habitats that takes advantage of inflatable beam technologies currently being used in various military, aerospace, and commercial applications. Current technology uses a fiber-reinforced elastomeric composite capable of containing high gas pressure, giving the beams the strength needed to form a robust structure that can withstand being buried by regolith for radiation/micrometeorite protection. NextGen's novel approach is to join multiple beams, forming a continuous cellular arched structures or a series of connected rings to form cylinders. Key advantages of this approach include: ability of structure to maintain strength and stiffness independent of pressure in habitable volume, double wall construction preventing puncture of internal/external wall, ability to isolate leaks in affected elements without compromising habitat pressure or structural integrity, possible use of water or other radiation absorbing material to fill beams, and relative ease of creating a rigid structure by filling the beams with foam. We will achieve TRL of 2 in Phase I and technology transition to TRL of 5 in Phase II. NextGen team's strength lies in related prior work, and with investigators who have an exceptional background in inflatable structures and low-stowed volume designs.

Primary U.S. Work Locations and Key Partners



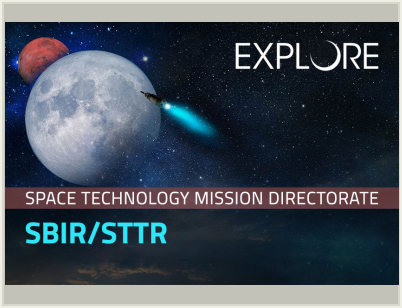


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Table of Contents

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Organizations Performing Work	Role	Type	Location
NextGen Aeronautics, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Torrance, California
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
California	Virginia

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139114)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

NextGen Aeronautics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

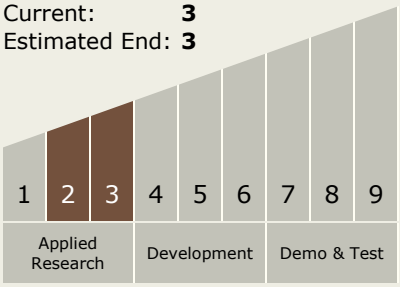
Carlos Torrez

Principal Investigator:

Laila Ashegian

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.1 Aeroassist and Atmospheric Entry
    - TX09.1.2 Hypersonic Decelerators

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System